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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Application Number: 10/033,328
Filing Date: November 02, 2001
Appellant(s): PATEK ET AL.

John E. Gunther
Reg. No. 43,649
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 1/7/2008 appealing from the Office action mailed 4/17/2007.

(1) Real Party in Interest

A statement identifying by name the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

(3) Status of Claims

The statement of the status of claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Claimed Subject Matter

The summary of claimed subject matter contained in the brief is correct.

(6) Grounds of Rejection to be Reviewed on Appeal

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

(7) Claims Appendix

The copy of the appealed claims contained in the Appendix to the brief is correct.

(8) Evidence Relied Upon

Chin	US 5,617,421	Apr. 1, 1997
Flanders	US 6,172,980	Jan. 9, 2001
Nolan	US 6,661,790	Dec. 9, 2003 (filed Aug. 6 1999)

RFC 1349: P. Almquist, "Type of Service in the Internet Protocol Suite" July 1992

(9) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 1-7, 14, 16, 18, 21 and 25 rejected under 35 U.S.C. 102(b) as being anticipated by Chin et al. (US 5,617,421).

With regard to claim 1, Chin discloses a method for sending a data item from a source to selected destinations of a plurality of destinations in a switching network, said method comprising:

examining said data item to determine a routing identifier (source address) for said data item (at least Col 18, Lines 1-12);

using said routing identifier as an index, accessing a data structure (Table 4) comprising routing control values for said plurality of destinations (at least Col 18, Lines 10-12); and

transferring said data item from said source to said selected destinations based on said routing control values, wherein said data item is concurrently transferred from said source to said selected destinations based on said routing control values (at least Col 18, Lines 20-22).

With regard to claim 2, Chin further discloses that said data structure comprises a table (Table 4).

With regard to claim 3, Chin further discloses that said table comprises predetermined routing information (port masks)(Table 4).

With regard to claim 4, Chin further discloses that said data item comprises a portion of a frame (at least Col 18, Lines 20-22).

With regard to claim 5, Chin further discloses that said routing control values is part of a mask (Port of exit mask)(Table 4).

With regard to claim 6, Chin further discloses that said source comprises an input queue (queue at port of entry)(at least Col 18, Lines 1-3).

With regard to claim 7, Chin further discloses that said switching network is part of a router (data is forwarded to appropriate ports in the switch)(a least Col 18, Lines 1-22).

Claims 14 and 25 are rejected under the same rationale as claim 1, since they recite substantially identical subject matter. Any differences between the claims do not result in patentably distinct claims and all of the limitations are taught by the above cited art.

With regard to claim 16, Chin further discloses that said frame has a frame format comprising a type (at least Col 6, Lines 42-53), a destination ID (at least Col 18, Lines 1-3), and data (at least Col 6, Lines 42-53) (Ethernet frames contain all of these fields).

With regard to claim 18, Chin further discloses that said frame has a frame format comprising a type (at least Col 6, Lines 42-53), a route (destination address)(at least Col 18, Lines 1-3), and data (at least Col 6, Lines 42-53).

With regard to claim 21, Chin further discloses that said memory for storing said mask includes a lockable row (it is well-known that table entries may be set as read-only)(Table 4 and Col 12, Lines 28-31).

Claims 8-13, 15 and 22-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (US 5,617,421) in view of Nolan (US 6,661,790).

With regard to claim 8, while the system disclosed by Chin shows substantial features of the claimed invention (discussed above with regard to claim 1), it fails to disclose transferring the frame by reference to the output queues.

Nolan discloses a similar system for multicasting data in a network. Nolan discloses that loading and unloading of transmit and receive queues by reference through the use of pointers is old and well known (at least Col 3, lines 22-27). Transferring data by reference is notoriously well known in the networking arts and allows data to be forwarded without being copied multiple times and reduces the time needed to transmit the data.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to load/unload the transmit and receive queues by using pointers as references to the data to be transmitted, since it reduces the time needed to forward data by reducing the amount of times it must be copied.

With regard to claim 9, Chin further discloses copying a word associated with said frame to selected output queues corresponding to said selected output queue controllers (at least Col 18, Lines 20-22).

With regard to claim 10, Chin further discloses that said data structure comprises a table, said table comprising said mask (Table 4).

With regard to claim 11, Chin further discloses that said destination identifier is an index into said table for selecting said mask (at least Table 4 and Col 18, Lines 10-12).

With regard to claim 12, Nolan further discloses that said frame is stored in shared memory and is located by reference to said frame (at least Col 3, Lines 22-27).

With regard to claim 13, Nolan further discloses that said reference to said frame includes a pointer to said frame (at least Col 3, Lines 22-27).

Claims 15 and 22 are rejected under the same rationale as claim 8, since they recite substantially identical subject matter. Any differences between the claims do not result in patentably distinct claims and all of the limitations are taught by the above cited art. With specific reference to claim 22, Chin further discloses a first crossbar switch for transferring a frame from an input port to shared memory (receive circuitry of the switch ports)(col. 6, ll. 53-67), a second crossbar switch for transferring said frame to a plurality of selected output ports (processing and forwarding circuitry)(col. 6, ll. 53-67) and a control unit for selecting said plurality of selected output ports using a multicast data structure having predetermined multicast routes (the portion of the switching fabric circuit that maintains and uses the forwarding table to make routing decisions)(col. 7, ll. 1-16).

With regard to claim 23, Chin further discloses that transferring said frame to a plurality of selected output ports happens in parallel (at least Col 18, Lines 20-22).

With regard to claim 24, Chin further discloses that said control unit comprises a lockable cache memory for storing a mask, said mask used in selecting said plurality of selected output ports (it is well-known that table entries may be set as read-only)(Table 4 and Col 12, Lines 28-31).

Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (US 6,661,790) in view of RFC 1349.

With regard to claim 17, while the system disclosed by Chin shows substantial features of the claimed invention (discussed above), including that said frame has a frame format comprising a type (at least Col 6, Lines 42-53) and a route (destination address)(at least Col 18, Lines 1-3), it fails to disclose that the frame comprises user defined control information.

RFC 1349 teaches including user defined control information in a packet header (at least Pages 5-6). This allows the user to specify control information that routers may use to handle the packet. This would have been an advantageous addition to the system disclosed by Chin, and would have been present whenever IP packets were being routed, since it allows the user to have some control over the routing process, by requesting that the routers minimize delay or cost, maximize throughput or reliability, or

specify normal service. This would be especially useful in assisting the routers in their intelligent path selection (Chin, Col 18, Lines 46-60).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use user defined control information to specify how the router should handle particular packets.

Claims 19 and 20 rejected under 35 U.S.C. 103(a) as being unpatentable over Chin et al. (US 6,661,790) in view of Flanders et al. (US 6,172,980).

With regard to claims 19 and 20, while the system disclosed by Chin shows substantial features of the claimed invention (discussed above), it fails to disclose that said route comprises a multicast flow ID of a unicast destination port ID.

Flanders teaches providing a multicast flow ID and/or a unicast destination port ID in a packet (at least Col 6, Line 49 to Col 7, Line 4). Including these fields allows appropriate packets associated with flows to be looked up in a flow cache table to be assigned QoS parameters, ensuring that the packets are properly routed to maintain the QoS for the entire flow.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to use multicast flow ID and/or unicast destination port ID's to associate appropriate packets with flows to maintain QoS if the packet is associated with a flow.

(10) Response to Argument

Regarding claims 1-7, 14, 16, 18, 21 and 25, rejected under 35 U.S.C. § 102(b) as anticipated by Chin (US 5,617,421), of which claims 1, 14 and 25 are independent, Appellants present two principal arguments directed to independent claims 1 and 14 (Br. 5-9), and present no substantive arguments directed to the separate patentability of independent claim 25 or the remaining dependent claims encompassed by this rejection. The Examiner will address the arguments of claims 1 and 14 separately.

Regarding claims 8-13, 15 and 22-24, rejected under 35 U.S.C. § 103(a) as being unpatentable over Chin (US 5,617,421) in view of Nolan (US 6,661,790), of which claims 8 and 22 are independent, Appellants present two principal arguments directed to independent claims 8 and 22 (Br. 9-11), and present no substantive arguments directed to the separate patentability of the remaining dependent claims encompassed by this rejection. The Examiner will address the arguments of claims 8 and 22 separately.

Regarding claims 17, 19 and 20, rejected under 35 U.S.C. § 103(a), appellants present no substantive arguments directed to the separate patentability of these claims. Accordingly, the Examiner will not separately address these claims.

Regarding claim 1), Appellants argue that Chin does not teach or suggest "'concurrently' transferring the data item from the source to the selected destinations"

(Br. 6). The Examiner respectfully disagrees, since Chin does, in fact, teach concurrently transferring the data item (a multicast packet) from the source to the selected destinations.

As correctly noted by Appellants (Br. 6-7), Chin teaches "forwarding" a multicast packet based on the "final port of exit mask" (col. 18, ll.10-22). Chin further discloses that a "port of exit mask is a field of binary bits, wherein each bit corresponds to one or more of the ports for the interswitch link" (col. 16, ll. 26-29) and that "the port of exit mask is used by the port of entry to determine the port **or ports** of exit of the system packet" (emphasis added)(col. 16, ll. 36-38). Chin even provides an example of forwarding a multipast packet, wherein a port of exit mask of "11000" "causes the packet processor of port 1 to forward the [multicast] system packet to ports 4 and 5, and not to port 3" (col. 17, ll. 59-64).

Appellants' argument appears to rely on the lack of an explicit statement by Chin that forwarding the multicast packet to multiple ports occurs "concurrently" (Br. 7). While Chin does not use the term "concurrently", one of ordinar7y skill in the art, armed with even a rudimentary understanding of multicast packet switching, would have understood Chin's teaching of forwarding a packet to multiple ports inside a switch to mean concurrently forwarding the packet to the each of the ports for transmittal. There is simply no disclosure in Chin even suggesting that the packets are sent to each port at different times.

Regarding claim 14), Appellants argue that Chin fails to disclose "copying said data to said plurality of selected output queues" (Br. 8). The Examiner respectfully disagrees. As discussed above regarding claim 1, Chin teaches concurrently forwarding a multicast packet to a plurality of output ports. Chin further discloses that the ports include circuitry for transmission, receiving, processing and forwarding packets (col. 6, ll. 53-67). In order to transmit the packets from the selected ports, the packet must be copied to an output queue for that port. The packet simply cannot be transmitted from a port unless the port has a copy of the packet. Therefore, copying the data to said plurality of output queues is an inherent part of forwarding the data (multicast packet) to those ports and transmitting the packet to its ultimate destination.

Regarding claim 8), Appellants argue that Nolan does not teach "transferring a reference to said frame to at least two selected output queue controllers in accordance with said mask, wherein the reference to said frame is concurrently transferred to at least two selected output queue controllers in accordance with said mask" (Br. 9). It is noted that this limitation is taught by Chin, as discussed above in the grounds of rejection for claim 8, and the discussion of claim 1. The Examiner has not relied upon Nolan for teaching this limitation, and one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Regarding claim 22), Appellants argue that the combination of Chin and Nolan fails to teach "a first crossbar switch", a "second crossbar switch" and a "control unit for selecting said plurality of selected output ports using a multicast data structure having predetermined multicast routes" (Br. 11). The Examiner respectfully disagrees, and notes that Chin clearly discloses that his invention is directed to a method and apparatus for extending virtual domains in a network including multiple "switching fabric circuits", each having a forwarding table containing routing information.

The Examiner further notes that claim 22 is a system claim that substantially corresponds to method claim 8. The claimed switches and control unit are merely the hardware that performs the method of claim 8. More specifically, the claimed "first crossbar switch" corresponds to Chin's receive circuitry of the switch ports (col. 6, ll. 53-67), the "second crossbar switch" corresponds to the "processing and forwarding" circuitry (col. 6, ll. 53-67), and the claimed control unit corresponds to portion of the switching fabric circuit that maintains and uses the forwarding table to make routing decisions (col. 7, ll. 1-16).

(11) Related Proceeding(s) Appendix

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

/Aaron Strange/

Examiner, Art Unit 2153

Conferees:

/Glenton B. Burgess/

Supervisory Patent Examiner, Art Unit 2153

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